

WØMTL – Mark Twain Land Area News – WØKEM

NOVEMBER, 2009

AMATEUR RADIO



The First Thanksgiving Observance

This historic proclamation was issued by George Washington during his first year as President. It sets aside Thursday, November 26 as "A Day of Public Thanksgiving and Prayer."

Signed by Washington on October 3, 1789 and entitled "General Thanksgiving," the decree appointed the day "to be observed by acknowledging with grateful hearts the many and signal favors of Almighty God."

While there were Thanksgiving observances in America both before and after Washington's proclamation, this represents the first to be so designated by the new national government.

After their first harvest, the colonists of the Plymouth Plantation held a celebration of food and feasting in the fall of 1621. Indian chiefs Massasoit, Squanto and Samoset joined in the celebration with ninety of their men in the three-day event.

The first recorded Thanksgiving observance was held on June 29, 1671 at Charlestown, Massachusetts by proclamation of the town's governing council. During the 1700s, it was common practice for individual colonies to observe days of thanksgiving throughout each year. A Thanksgiving Day two hundred years ago was a day set aside for prayer and fasting, not a day marked by plentiful food and drink as is today's custom. Later in the 18th century each of the states periodically would designate a day of thanksgiving in honor of a military victory, an adoption of a state constitution or an exceptionally bountiful crop.

Such a Thanksgiving Day celebration was held in December of 1777 by the colonies nationwide, commemorating the surrender of British General Burgoyne at Saratoga.

Later, on October 3, 1863, President Abraham Lincoln issued a proclamation calling for the observance of the fourth Tuesday of November as a national holiday. In 1939, President Franklin D. Roosevelt moved the holiday to the third Thursday of November (to extend the Christmas shopping season and boost the economy). After a storm of protest, Roosevelt changed the holiday again in 1941 to the fourth Thursday in November, where it stands today.



Happy Thanksgiving

HARC OFFICERS

PRESIDENT: HOWARD BARNES, KØDFW
V-PRES: J.D. SINCLAIR, WØAJD
SECRETARY: FRED MILLER, KBØWIL
TREASURER: TONY GILLILAND, WØPGL
TRUSTEE: CLIFF AHRENS, KØCA
EDITOR: BONNIE SINCLAIR, WBØWAP

**Next Scheduled Meeting: Wednesday
NOVEMBER 11, at 7:30 PM**

Regular Meetings are held at Beth Haven Nursing Home, 2500 Pleasant St., Hannibal, Mo. Enter at the main entrance; turn left through the lounge area to the elevator. Take the elevator down to the first floor, and go to your right/left around the corner, down the hall to the cafeteria.

**FCC VE TEST DATES FOR YEAR OF 2010
Hannibal, MO ARC 2010 Exam Dates**

New dates for 2010 will be listed later.
 Exams will take place at 8:30 PM after the regular scheduled HARC meeting. The exam session will be at the Beth Haven Nursing Home, in the Cafeteria on the 1st (lower) Floor, 2500 Pleasant St., Hannibal, MO. Registration is required at least 72 hours before the exam session by contacting the team liaison, Fred Miller- KBØWIL at kb0wil@arrl.net or 573-221-2429.

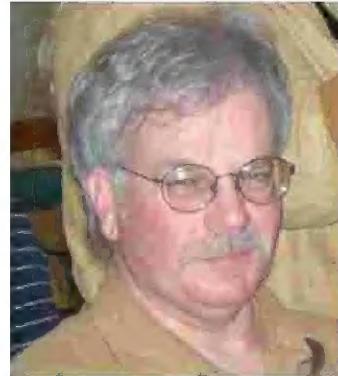
The 2010 test fee will be \$15.00. It goes to ARRL/VEC. Bring a photo ID (or two non-photo ID's); if currently licensed, bring the original and a photocopy of your valid FCC license; and if you are claiming credit for successful completion of an exam, bring the original and photocopy of any applicable CSCE's.

**HARC MONDAY NIGHT NET
CALL LIST OF VOLUNTEER OPERATORS
NOVEMBER 2009**

2	WØPGL	TONY
9	N9UPG	BILL
16	KB9VIS	BRIAN
23	WØAJD	JD
30	KBØWIL	FRED

THANKS TO ALL!

**HANNIBAL AMATEUR RADIO CLUB
MINUTES**



Minutes of the meeting recorded by:
Fred-KBØWIL...HARC Secretary...

Date: October 14th, 2009

Location: Beth Haven Nursing Home 2500 Pleasant St. Hannibal, Mo.

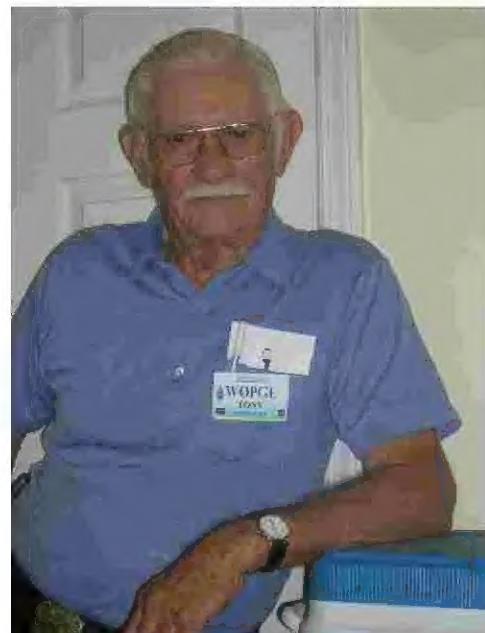
Meeting called to order by: Howie-KØDFW

Previous meeting minutes: September 9th, 2009

Motion to approve: J.D.-WØAJD

Seconded by: Cliff-KØCA

Treasurers report: Tony-WØPGL



Cash-\$763.71 CD-\$1,274.02 Total-\$2,037.73

Motion to approve: Mel-KCØHYY

Seconded by: Carol-WA9EFV

Repeater report: Fred-KBØWIL

The repeaters are working and sounding great.

Emergency weather drill:

October 7th, 2009 Tony-WØPGL, Carol-WA9EFV, and John-KCØMMO participated in the Hannibal area severe weather test drill. They gave reports on the local 2- meter Repeaters.

Marion 911 center meeting and get together.

The Hannibal and Quincy, IL clubs got together, for a look at the new 911 Building on October 15th 2009.

November meeting:

We will be taking nominations for the HARC officers for 2010. Please attend and make your nomination.

We will also, be taking nominations for the HARC 2009 member of the year. The nominee will have done something involving the club; helping with special events, Field Day, logging reports, paperwork, etc.

December meeting:

We decided to have our annual carry in of snacks, at our club meeting on December 9th, 2009.

February 2010 HARC Supper:

Saturday, Feb 6th, 2010. We voted to have the clubs annual supper/get together on February 6th, 2010. Saturday, at 6:00 PM, Golden Corral Restaurant here in Hannibal, Mo.

Motion to approve: Bonnie-WBØWAP

Seconded by: Luan-KC9PGS

Fred-KBØWIL will take care of the reservation, for the room.

50/50 Winner:

Luan-KC9PGS was the winner tonight.

Congratulations.

VE-Testing tonight:

We had two participants tonight take exams. Cliff-KØCA , Ed-NØNNV, and Fred-KBØWIL were the VE's.

Congratulations to the following two participants:

KC9MMO, JOHN POTTER upgraded to General
KC9QPP, LYLE E. HILL - Technician

Number of members present: 17

Number of guests: 2

Total in attendance: 19

FROM THE PRESIDENT'S DESK

NOVEMBER 2009

BY HOWARD BARNES K0DFW



November is here already! That means that turkey day isn't far away and Christmas is even closer than it was. Time is flying. Well you had better have all your antenna work done because it won't be long before the ground starts freezing and the snow flakes start flying. As for me I don't have my antenna work done yet. My tri band beam's driven element is loose on the boom and now I see that the coax lead has broken off. I rented a lift the other day, and told the guy that I was renting it from, that if it wasn't 40 ft. in length like he told me, that he would get it back, and give me a refund. He agreed. So here I go pulling this to my house to get me to the top of my tower and I can come to within 3 ft. of reaching it. Man, you talk about depressing. So on to plan two. I went to another rental place, and he has a lift that will do 55 ft. Now, I know that I can reach it with that height this time, and room to spare! Anyway now it depends on the weather. My time is now taken up with deer season, and manning the shop. That cuts in on antenna work time. So we shall see if I can get it fixed before Thanksgiving.

I want to say congratulations to Luan, KC9PGS, on running her first QSO party from her dad's house, WA9EFV. It takes a lot of courage to

get on the air like that as a new ham. She did a fine job. I heard that Carol, her dad, was helping log the contacts.

If you didn't get to make the dinner at the new Marion County 911 building you missed a good time. What a place. This place has a 180 ft tower behind it for their antennas, and full back up generators, and the building has 12" thick bullet proof walls, with bullet proof windows, and a full security system like a prison, with steel doors to the operating room. It has a full kitchen with meeting rooms, offices, and a room with bunk beds, and one of the most state of art radio and telephone systems, that you have ever seen. It has 5 operating positions in the operations room, with some of the most up today desks that you could imagine. What a time we had. You should have been there, and the food was good too!

As I write this, Halloween is next weekend. If you are taking out young ones, make sure they are visible on the dark streets, and have plenty of candy in your bowls at your door!

We are having nominations for officers at the next meeting, November 11. So, if you want to nominate anyone for office, this is the time to do it. Elections will be at the December meeting, and we will nominate for the Ham of the year award that we give out. If you know someone that has gone to great lengths to promote ham radio or has been very active in the club, now is the time to nominate them.

I really don't have much more to talk about right now, but I do wish everyone good DXing this month.

73's Howard K0DFW

Following is an email received from Jerry Harland, who works at the Hannibal Regional Hospital, to Tony W0PGL, and JD, W0AJD. Jerry is helping to get an emergency station set up at the hospital. He is a new Ham operator, so we all need to help him where, and when we can. This has been an ongoing thing for a few years. Hopefully, it will be completed soon.

Email following:

"I just wanted to tell both of you that I passed my Ham Radio test. My call sign is KC9QOD. Thank you both for your help with the Ham Radio stuff here at the hospital. The next month I will be

moving the Ant. to its new spot. If you guys could come back and help us test all the radio equipment that we received the past two years.

Thanks, Jerry Harland

Bonnie, WB0WAP

DX Horizons November 2009

by Cliff Ahrens K0CA



Last month saw the very active Midway K4M operation. With nice signals here in the Midwest, many DXers had a lot of fun working them. For QSL information, including their online QSL request form, visit their web page at:

<http://www.midway2009.com>. Although there is still little if any sign of sunspots, band conditions have been improving with the cooler fall weather. Now's the time to winterize your lawn mower and get on the air and work some DX (and rake leaves!). Here's some news of DX planned for November.

CQWW DX CW Contest – November 28 and 29. This contest offers a great opportunity to work lots of good DX in one weekend.

D6 Comoros. F6AML plans to operate from Comoros as D68F from November 13th to 23rd. He will be on both CW and SSB on 160 through 10 meters. Sam plans to emphasize 160 meters and

the low bands. QSL direct via home call or the REF bureau.

P2 Papua New Guinea. Five operators will be active from several Papua New Guinea IOTA islands during the first half of November. Listen for P29NI from November 2-9, possibly P29VCX between November 11-16. They hope to be on 160-15 meters on CW, SSB and RTTY. For details as to which islands they will be on, and for more information, see

http://www.425dxn.org/dxped/p29_2009/index.html.

T30 West Kiribati. Look for N1EMC and N1IW to operate from West Kiribati as T30KI and T30IW from November 10 to 16. They will not be on 160 or 80 meters. QSL via David Franco, 3 Dugout Road, Hudson, NH 03051. For details, see

<http://dx.t30dx.net/>.

FT5W Crozet. Look for Flo FT5WO to be active from Crozet Island until November 14 or 15. He can usually be found on 17 and 20 meters phone only on Saturdays and Sundays between 0600 and 1300z. His favorite frequencies are 14260 to 14280 and 18165. QSL via F4DYW.

If you use the Firefox web browser, there's a neat add-on called Propfire, which gives ham radio propagation in Firefox. It shows the solar flux, sunspot number, and the A and K indices in your Firefox browser status bar. Right clicking on the status bar opens a popup window which offers more propagation information, including a full propagation report from the NOAA Space Weather Prediction Center. It's available free at

<http://www.n0hr.com/Propfire.htm>.

That's it for this month. Thanks to The Daily DX and Ohio Penn DX Bulletin for some of the information in this column. Don't forget to check the latest DX news in the daily and weekly DX bulletins.

73 and good DX, Cliff K0CA

Amateur Radio License Class Scheduled for January 2010

The Western Illinois Amateur Radio Club will be holding a license class on Tuesday evenings from 7 to 9 PM beginning January 5, 2010. There will be 10 sessions including the official exam which is scheduled for Tuesday, March 11th. The club is planning two separate classes. The first is the entry level leading to the Technician license and the second is an upgrade class leading to the General or Extra license. Both classes will be held simultaneously at the consulting engineering firm of Poepping Stone Bach Assoc (PSBA) which is located at 100 S. 54th St. in Quincy about ½ mile south of Home Depot.

The class leading to the Technician license will consist of lecture and demonstrations as well as Q&A. The text is "The ARRL Ham Radio License Manual 1st Edition, 3rd Printing." A copy of this book will be available at the first session or ahead of time at the special price of \$20. Call Todd, AB9QW, at 217-593-7490 or email at toddc@psba.com to reserve a copy.

The class leading to the General or Extra license will be in Q&A format. Using the available high speed internet connection, it will be possible to try sample tests on-line using the instructor's laptop computer. The text for the General License is: "The ARRL General Class License Manual for Ham Radio, 6th Edition." For the Extra License, the text is: "The ARRL Extra Class License Manual for Ham Radio, 9th Edition. The special price for either manual is \$20. Contact Todd, AB9QW, to reserve a copy.

All of those with interest from the Hannibal area are invited to attend

NOMINATIONS FOR OFFICERS

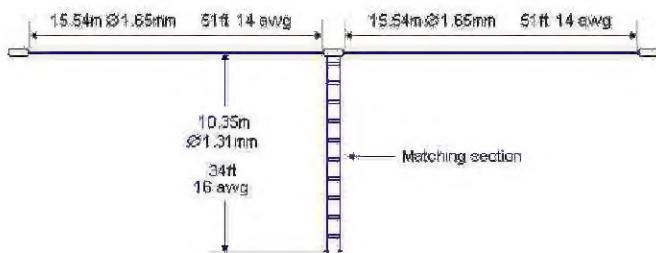
Nominations for officers of the HARC club will be at the next meeting, November 11. So, please try to be there, and if you want to become an officer, throw your hat in. We need to have people come

forward and participate! We will be nominating for President, Vice President, Treasurer, and Secretary. Hopefully some of the existing officers will continue to serve. Elections will be at the December meeting.

Also we need to nominate a person for the Ham of the year award. This is given to someone who has gone out of their way to promote ham radio, or has been very active in the club. Nominations for this will be taken at the November meeting, and voted on in December meeting. Presentation of the trophy will be done at the February get together at Golden Corral. See you at the meeting!

73, Bonnie, WB0WAP

***G5RV multi-band antenna**



Construction guide of the G5RV (II), by Louis Varney, G5RV

The Antenna

The dimensions of the antenna and its matching section are shown in the drawing displayed below. The "flat-top" should, if possible, be horizontal and run in a straight line, and should be erected as high as possible above ground. In describing the theory of operation, it has been assumed that it is generally possible to erect the antenna at an average height of about 10.35m (34 ft), which happens to be the optimum radiation efficiency on 160, 80 and 40m bands for any horizontal type antenna, in practice few amateurs can install masts of the optimum height of half a wavelength on 80 or 40m, and certainly not on 160m.

If, due to limited space available, or to the shape of the garden, it is not possible to

accommodate the 31.1m (102 ft) top in a straight line, up to about 3m (10 ft) of the antenna wire at each end may be allowed to hang vertically or at some convenient angle, or be bent in a horizontal plane, with little practical effect upon performance. This is because, for any resonant dipole antenna, most of the effective radiation takes place from the centre two-thirds of its length where the current antinodes are situated. Near to each end of such an antenna, the amplitude of the current standing wave falls rapidly to zero at the outer extremities; consequently, the effective radiation from these parts of the antenna is minimal.

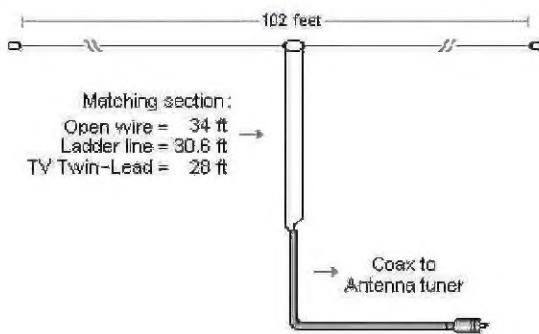
The antenna may also be used in the form of an inverted-V (Λ). However, it should be borne in mind that, for such a configuration to radiate at maximum efficiency, the included angle at the apex of the Λ should not be less than about 120° (although many authors consider an opening between $90-120^\circ$ only); The use of #14 AWG (inner Ø1.63mm) enameled copper wire (stranded) is recommended for all models, although thinner gauges such as #16 (inner Ø1.31mm) or even #18 AWG (inner Ø1.04mm) solid wire can be used. If the wire has to sustain a strong traction, a stranded steel wire of #14 AWG protected with PVC is also suitable.

The Matching Section

This should be, preferably, of open-wire feeder construction for minimum loss. Since this section always carries a standing-wave of current (and voltage) its actual impedance is unimportant. A typical, and very satisfactory, form of construction is shown below. The feeder spreaders may be made of any high-grade plastic strips or tubing; the clear plastic tubing sold for beer or wine siphoning is ideal.

If it is desired to use 300Ω ribbon type feeder for this section, it is strongly recommended that the type with "windows" (ladder line) be used because of its much lower loss than that with solid insulation throughout its length, and its relative freedom from the "detuning" effect

caused by rain or snow. If this type of feeder is used for the matching section, allowance must be made for its velocity factor in calculating the mechanical length required to resonate as a half-wave section electrically at 14.150 MHz. Since the velocity factor of standard 300Ω ribbon feeder is 0.82, the mechanical length should be 8.5m (28 ft). However, if 300Ω ribbon with "windows" is used, its velocity factor will be almost that of open-wire feeder, say 0.90, so its mechanical length should be 9.3m (30.6 ft). This section should hang vertically from the centre of the antenna for at least 6.1m (20 ft) or more if possible. It can then be bent and tight off to a suitable post with a length of nylon or terylene cord so as to be supported at above head-height to the point where, supported by a second post, its lower end is connected to the feeder.



Can we use a coaxial for the matching section ? Louis Varney didn't really extend on this question but we can easily find the benefits and drawbacks of using a coaxial vs. a ladder line. At first sight the coaxial looks indeed more convenient and more resistant. But if both types of lines connected to an antenna tuner can achieve a very low SWR (any value below 2:1 is fine), both systems are not equivalent.

The ladder line is not as easy to install as coaxial. First it must be kept clear of large pieces of metal (at least 10 cm away) to avoid detuning. Unlike coaxial, once installed you cannot bend and shape a ladder line to accomodate your installation. A ladder line doesn't tolerate either repeated flexing as well as coaxial cable or the

line may break. At last the built-in antenna tuner of a transceiver is not designed to work with open-wire feed lines. However, a compromise is possible, like using an external balun or an external antenna tuner between the ladder line and the transceiver (one side is attached to the ladder line, the other one receiving a short coaxial that runs to the radio).

But contrarily to coaxial, a ladder line has two big advantages on the coaxial. First, as we told previously a ladder line offers the lowest RF loss on HF frequencies, even when the SWR is relatively high on the feed line to the antenna. Then, connected to an external antenna tuner, a ladder line doesn't require pruning to render the lowest SWR on each operating band. Simply attach your ladder line at your wire antenna and let the antenna tuner worry about providing the lowest SWR for the transceiver. This is simple and efficient ! In other words, a ladder line is much less complex to use than a coaxial; you have only to sit down in front of your radio to go on the air, without squinting at the antenna tuner's SWR meter and twisting several knobs to accomodate the lowest SWR. Using a coaxial you will probably find that you need to readjust the tuner when you go away from the central frequency (over 200 kHz or so) and surely when you will change of band.

So, even if most hams don't use the open-wire for convenience reasons, you can never beat a ladder-line fed dipole in terms of simplicity.

There are at least three ways to make the matching section: using an open wire, a ladder line (standard) or a TV Twin-Lead. Its end is connected to an external tuner linked to an ordinary coax to the radio. The full-size G5RV works on the 160m band too if the station end of the feeder (either balanced or coaxial-type) is strapped and fed by a suitable antenna tuner using a good earth connection or a counterpoise wire. In all cases the length of the matching section must be near 10m and should not be in contact with the ground and kept clear of large pieces of metal (> 10 cm away). Ideally this dipole must be placed over 10m high.

The Feeder

The antenna can be fed by any convenient type of feeder provided always that a suitable type of antenna tuner is used. In the original article describing the G5RV antenna, then in RSGB bulletin November 1966, it was suggested that if coaxial cable feeder was used, a balun (a balanced-to-unbalanced transformer) might be employed to provide the necessary impedance transformation at the base of the matching section. This was because the antenna and its matching section constitute a balanced system, whereas a coaxial cable is an unbalanced type of feeder. However, later experiments and a better understanding of the theory of operation of the balun indicated that such a device was unsuitable because of the highly reactive load it would "see" at the base of the matching or "make-up" section on most HF bands.

It is now known that if a balun is connected to a reactive load presenting a SWR of more than about 2:1, its internal losses increase, resulting in heating of the windings and saturation of its core (if used). In extreme cases, with relatively high power operation, the heat generated due to the power dissipated in the device can cause it to burn out as well as the PL jacks. However, the main reason for not employing a balun in the case of the G5RV antenna is that, unlike an antenna tuner which employs a tuned circuit, the balun cannot compensate for the reactive load condition presented to it by the antenna on most of the HF bands, whereas a suitable type of antenna tuner can do this most effectively and efficiently.

Recent experiments by Louis Varney to determine the importance or otherwise of "unbalance" effects caused by the direct connection of a coaxial feeder to the base of the matching section had a rather surprising result. They proved that, in fact, the HF currents measured at the junction of the inner conductor of the coaxial cable with one side of the (balanced) matching section and at the junction of the outer coaxial conductor (the shield) with the other side of this section are virtually identical on all bands up to 10m, where a slight but inconsequential difference in these currents has been observed.

There is, therefore, no need to provide an unbalanced-to-balanced device at this junction when using coaxial feeder.

However, the use of an unbalanced-to-unbalanced type of antenna tuner between the coaxial output of a transceiver and the coaxial feeder is essential because of the reactive condition presented at the station end of this feeder which, on all but the 20m band, will have a fairly high to high SWR on it. This SWR, however, will result in insignificant losses on a good-quality coaxial feeder of reasonable length; say, up to about 21.3m (70 ft). Because it will, inevitably, have standing waves on it, the actual characteristic impedance of the coaxial cable is unimportant, so that either 50Ω or 80Ω type can be used.

Another very convenient type of feeder that may be used is 75Ω Twin-Lead. However, because of the relatively high loss in this type of feeder at frequencies above about 40m, especially when it has a high SWR on it, it is recommended that not more than about 15 to 18m (50 to 60 ft) of this type feeder be used between the base of the matching section and the antenna tuner. Unfortunately the 75Ω Twin-Lead in the UK is the receiver type; the much less lossy transmitter type is available in continental Europe and in the U.S.A.

Impedance of a ladder line

Assuming that you use round wires, and air dielectric, the impedance is approximately:

$$\Omega = 120 \ln(2 \cdot D/d)$$

with Ω , the impedance in ohm

\ln , the natural logarithm

D, the wire spacing, center to center (from 30 to over 150 mm)

d, the wire diameter (from #14 to #18 AWG)

So, to get Ω ohms for a given wire diameter d, apply the next formula:

$$D = d \cdot e^{(\Omega/120)/2}$$

Here are some usual values:

Impedance (Ω)	D/d
150	1.9
200	2.8
300	6.2
450	22
600	75

By far the most efficient feeder is the "open-wire" type, although it is rarely used. A suitable length of such feeder can be constructed in exactly the same way as that described for the open-wire matching section. If this form of feeder is employed, almost any convenient length may be used from the centre of the antenna right to the antenna tuner (balanced) output terminals. In this case, of course, the matching section becomes an integral part of the feeder. A particularly convenient length of open-wire feeder is 25.6m (84 ft), because such a length permits parallel tuning of the antenna tuner circuit on all bands from 80 to 10m with conveniently located coil taps in the antenna tuner coils for each band, or, where the alternative form of antenna tuner employing a three-gang 500 pF/section variable coupling capacitor is used the optimum loading condition can be achieved for each band. However, this is not a rigid feeder length requirement and almost any length that is mechanically convenient may be used. Since this type of feeder will always carry a standing wave, its characteristic impedance is unimportant, and sharp bends, if necessary, may be used without detriment to its efficiency. It is only when this type of feeder is correctly terminated by a resistive load equal to its characteristic impedance that such bends must be avoided.

Coaxial cable HF choke

Under certain conditions, either due to the inherent "unbalanced-to-balanced" effect caused by the direct connection of a coaxial feeder to the base of the (balanced) matching section, or to pick-up of energy radiated by the antenna, a current may flow on the outside of the coaxial

outer conductor. This effect may be considerably reduced, or eliminated, by winding the coaxial cable feeder into a coil of 8 to 10 turns about 15 cm (6") in diameter immediately below the point of connection of the coaxial cable to the base of the matching section. The turns may be taped together or secured by nylon cord. However this construction can become the source of problems during thundery weathers.

Water-proof you said?

It is important, of course, that the junction of the coaxial cable to the matching section be made thoroughly water-proof and stays dry by any of the accepted methods; binding with several layers of plastic insulating tape or self-amalgamating tape and then applying two or three coats of polyurethane varnish, or totally enclosing the end of the coaxial cable and the connections to the base of the matching section in a sealant such as epoxy resin. At [WiMo](#) for example the 4:1 balun coming with their G5RV is designed such a way that it protects the SO-239 connector from the rain when it is hanged in vertical position, the coaxial being screwed over 2 cm inside the balun. However if you work with high power I warmly suggest you to place the balun and its connector inside a small home-made weatherproof box or, better, to use a small electrical box for outdoor installations so that all connexions stay dry. Even if it rains or if there is fog only once a month in your country, moisture is your worst enemy.

Have fun with G5RV !

(*Fred, KB0WIL sent this in- thanks Fred!)

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